Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Idaho

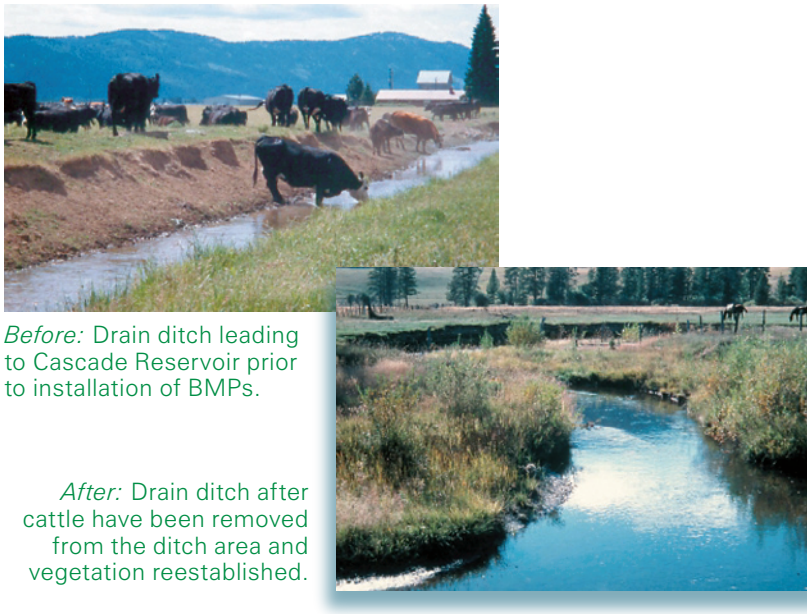
Forestry, Agricultural, and Stormwater Best Management Practices Improve Quality of Reservoir

Waterbody Improved

Water quality in the Cascade Reservoir, 70 miles north of Boise in central Idaho, has been adversely affected by phosphorus loading from various sources, including forestry operations and agricultural activities. By upgrading forest roads and implementing grazing best management practices, project partners saw a 57 percent reduction in phosphorus, exceeding the 37 percent reduction goal.

Problem

The Cascade Reservoir has been plagued with excessive algae blooms that have degraded fish habitat and caused poor water quality for swimming and boating. Water quality studies identified phosphorus as the pollutant of concern in the watershed, and as a result the reservoir was added to the state's 303(d) list for phosphorus. Point source pollution from wastewater treatment plants and a fish hatchery contributed about 10 percent of the phosphorus loading to the watershed. Nonpoint sources like forestry, agriculture, and urban areas contributed an estimated 84 percent, and poorly functioning or failing septic tanks were the source of the remaining 6 percent. The *Cascade Reservoir Phase II Watershed Management Plan* outlined a need to reduce phosphorus by 37 percent throughout the watershed to bring the reservoir into compliance with water quality standards.



Before: Drain ditch leading to Cascade Reservoir prior to installation of BMPs.

After: Drain ditch after cattle have been removed from the ditch area and vegetation reestablished.

Project Highlights

In 1995 the Idaho Department of Environmental Quality initiated a phased total maximum daily load (TMDL) process to address concerns about excess phosphorus. Forestry implementation projects addressed road-related sediment runoff along more than 109 miles of road by graveling 81 miles, closing 3.5 miles, paving 0.1 mile, and installing drainage upgrades on 24.7 miles of road. Agricultural implementation projects addressed grazing and irrigation management through livestock exclusion, fencing, tree and shrub planting, and wildlife habitat management. Urban and suburban implementation projects included the creation of wetlands as indirect treatment measures for stormwater discharges, as well as implementing parking lot upgrades and drainage improvements as direct stormwater treatment measures.

Summary of Estimated Phosphorus Loads and Reductions for Point and Nonpoint Sources in the Cascade Reservoir Watershed, 1994 through 2002

	Total Load (kg/yr)	Projected Reduction (kg/yr)[a]	Reduction Achieved to Date (kg)	Percent of Reduction Achieved to Date
Point Sources				
McCall Wastewater Treatment Plant[b]	3,947	3,947	3,947	100%
Idaho Fish and Game fish hatchery	726	508	508	100%
Point source totals	4,673	4,455	4,455	100%
Nonpoint Sources				
Forestry	8,840	2,652	2,675	101%
Agriculture	11,740	3,485	745	21%
Urban and suburban	4,423	1,359	255	19%
Septic systems	2,205	1,544	838[c]	38%
Unidentified and natural sources	8,508	2,134	80	4%
Nonpoint source totals	35,716	11,174	4,593	41%
Grand Total	**39,881**	**15,121**	**8,540**	**57%**

[a] Contains management, natural, and background loading.

[b] Construction of winter storage pond is not yet complete. Storage and delivery systems will be completed and tested. Additional options for effluent use are being investigated to ensure that the system will operate with no discharge to North Fork Payette River in extreme water years.

[c] The 838 kg figure used assumes that all septic-to-sewer hookups completed included proper decommissioning of the septic tanks. This assumption has yet to be validated. Septic decommissioning is being evaluated.

Results

Initial monitoring data indicate a 57 percent reduction in phosphorus, exceeding the 37 percent reduction goal. The reductions achieved have resulted in improved water quality conditions in the reservoir. Improved dissolved oxygen conditions were observed in the reservoir in 1999, 2000, and 2001. Continued reductions in phosphorus from nonpoint sources are expected through the participation of partners throughout the watershed.

Partners and Funding

This project's success has been ensured through the broad participation of agencies and the local project sponsors. Partners include the Idaho Department of Lands, USDA's Natural Resources Conservation Service and Forest Service, Boise Cascade Corporation, Valley Soil and Water Conservation District, City of McCalls, and local residents. Project costs from 1997 to 2004 totaled more than $20 million. Section 319 grants accounted for approximately $1.05 million in project funds and were used to implement best management practices, including forest road upgrades, grazing management activities, and stormwater treatment wetlands.

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